BSEE 2015 Domestic & International Stds Workshop
Quality Management / Equipment Reliability

Equipment Design and Reliability from Design to Decommissioning

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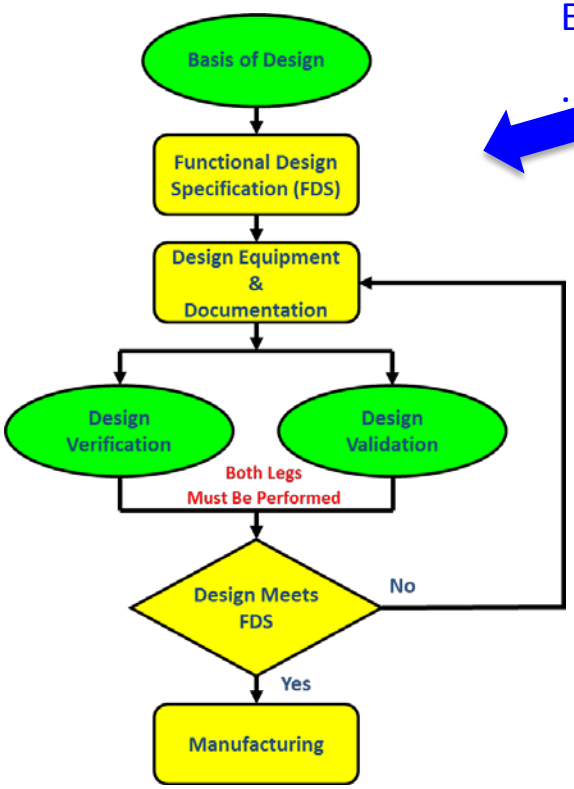
Equipment Design and Reliability from Design to Decommissioning

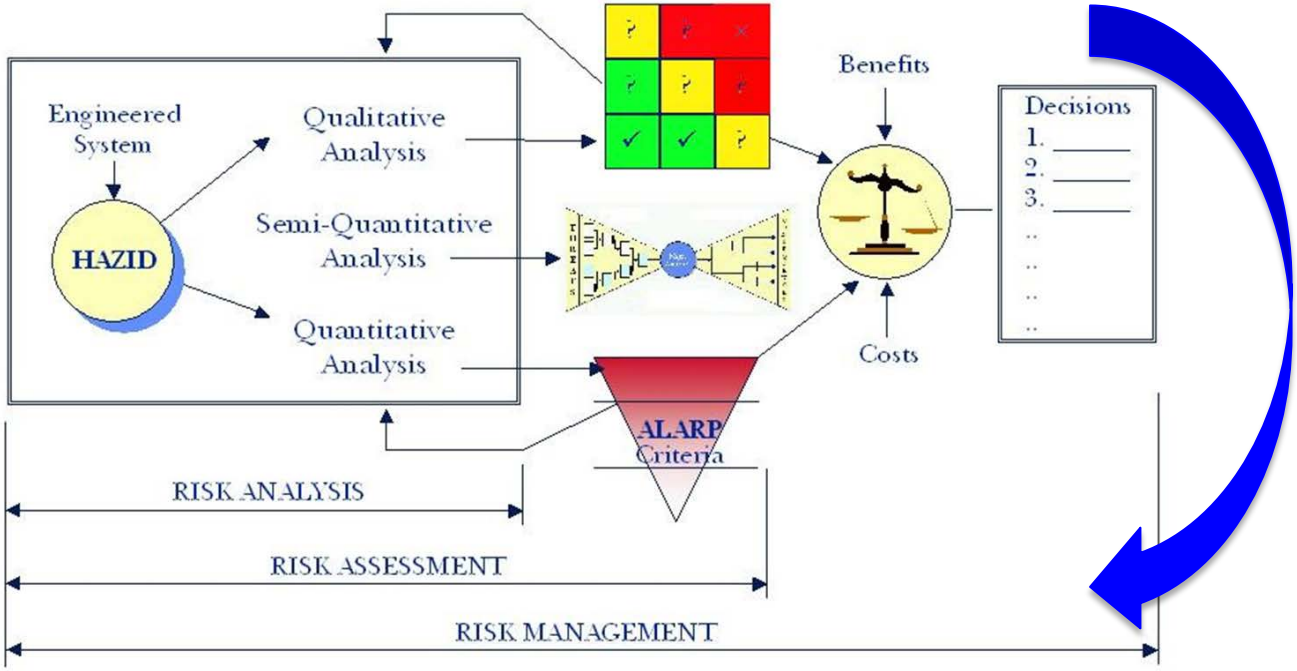
- Design Reliable Equipment
- Operational Environment
  - Culture of Safety
  - Human Factors Program
- Design for Operational, Extreme and Survival Loads
- Risks Analysis, Assessment and Management

Designing For Reliability

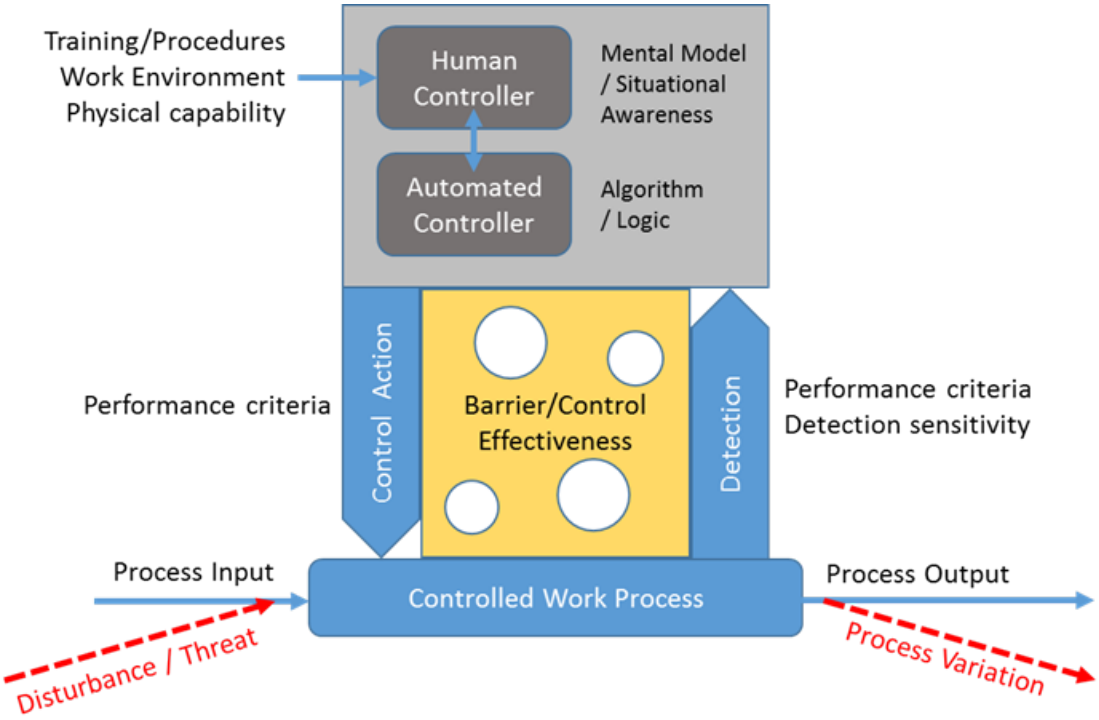


Everything starts with the design……

……and finishes with a Risk Management

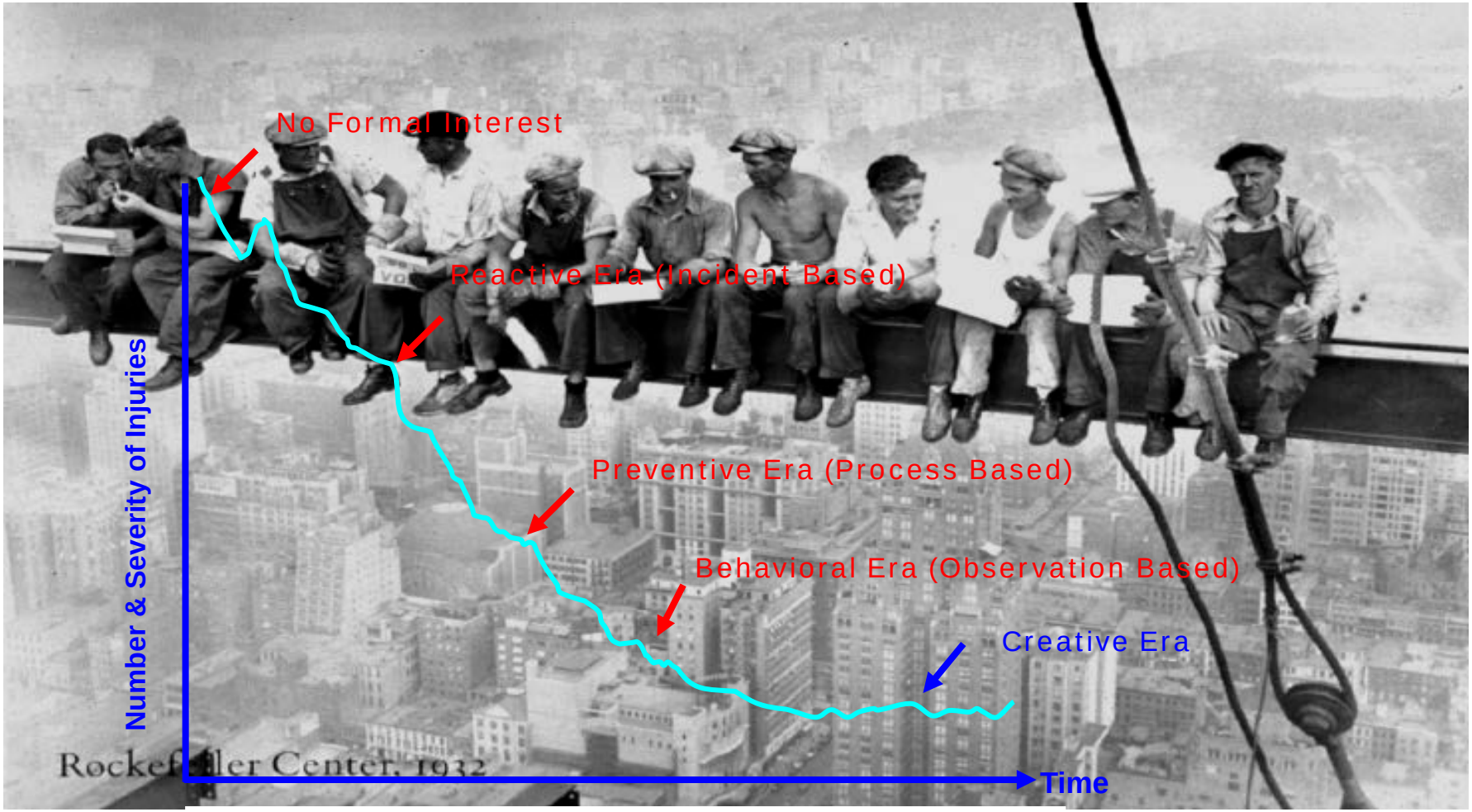


Designing For Reliability

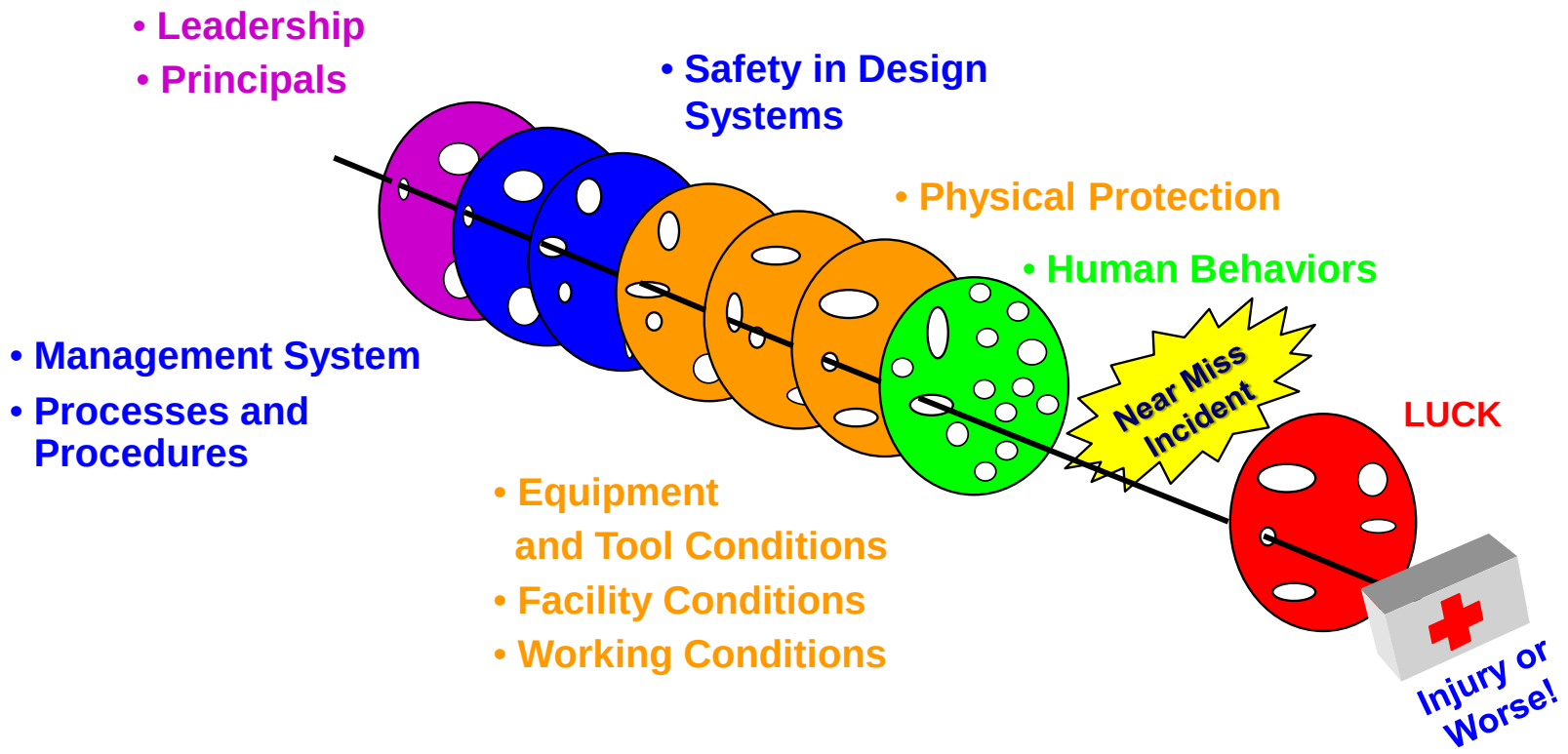


"If I am an engineer, I better damn well understand what reliability and what failure means, otherwise I am not an engineer...", Maxime Faget

The History of Safety



Incident Prevention Filters

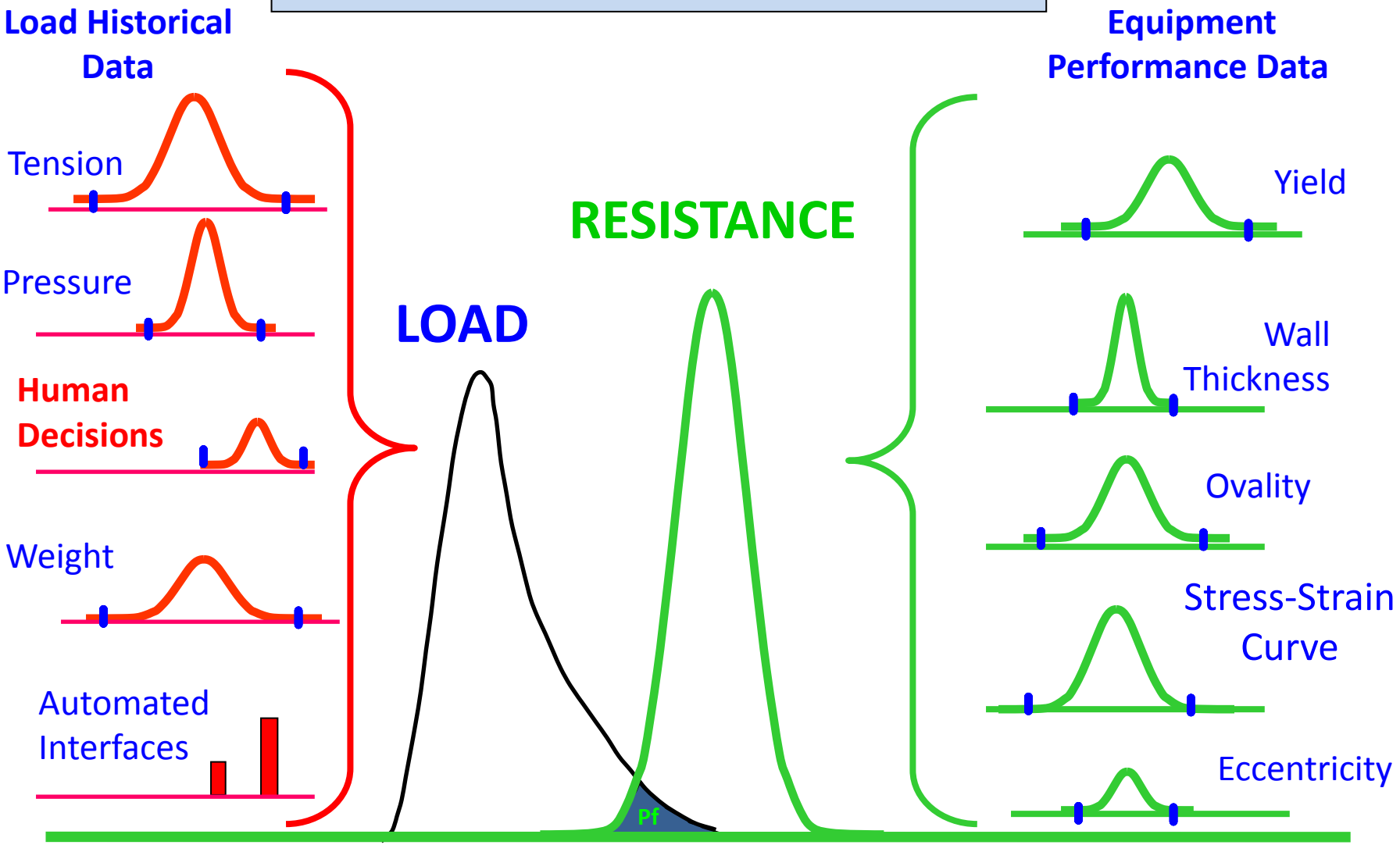


The Integral Model of Safety

	SUBJECTIVE	OBJECTIVE
INDIVIDUAL	**INTENTION** *VALUES* *ATTITUDE* *COMMITMENT* *RESPONSIBILITY* *EXPERIENCE*	**BEHAVIORS** *PLANS* *ACTIONS* *DECISIONS* *PERFORMANCE* *ACCURACY*
COMPANY	**cULTURE** *SHARED VALUES* *ETHICS* *MORALE* *MYTHS AND LEGENDS* *JUSTICE* *FAIRNESS* *COVENANTS*	**sYSTEMS** *GANIZATIONAL STRUCTURES* *WORK PROCESSES* *POLICY AND PROCEDURES* *SHARED METRICS* *CONTRACTS* *SEMS* *REGULATIONS*

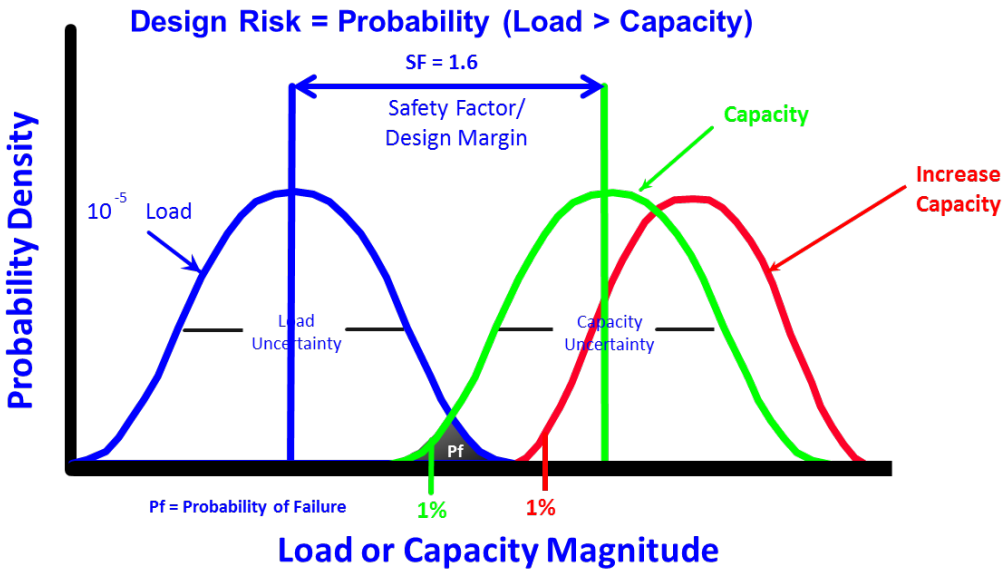
Design Concept

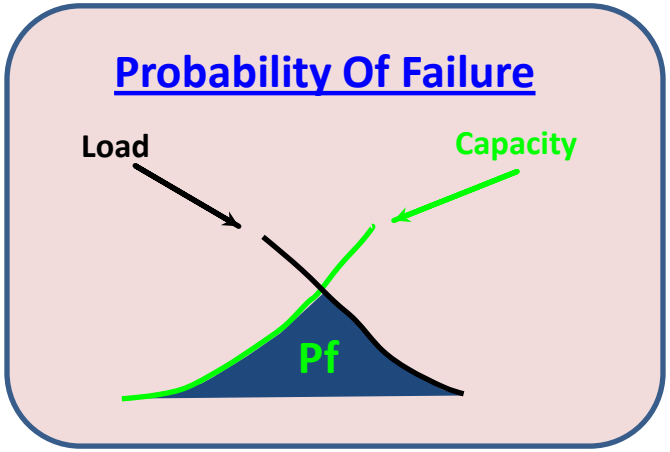
Reliability Based Design Theory



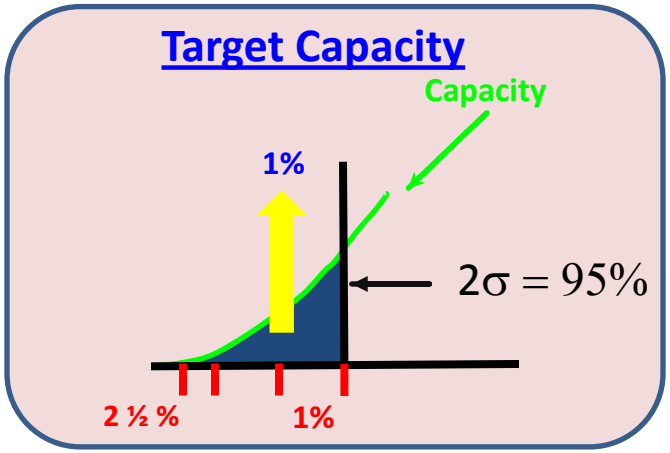
Reliability Based Design: As outlined in API Spec 5C1 (ISO 10400)

Reliability Based Design

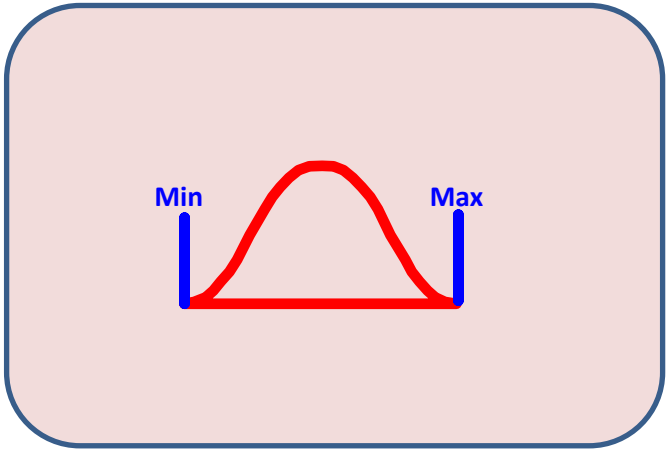




Pf = the area when the load exceeds the capacity



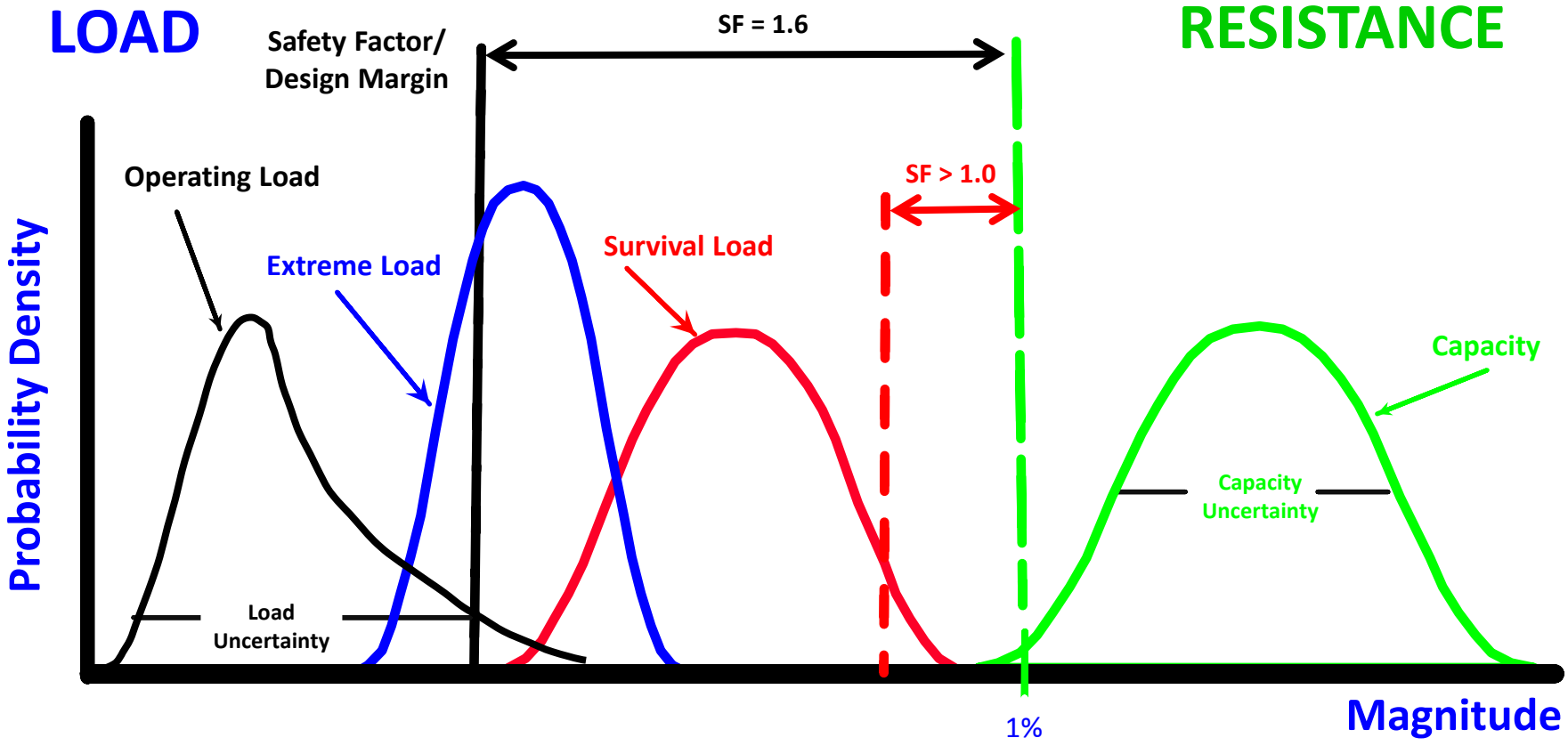
Target Capacity = weighted Value of the bottom 2 ½%



Multi – Variables Using Truncated Normal

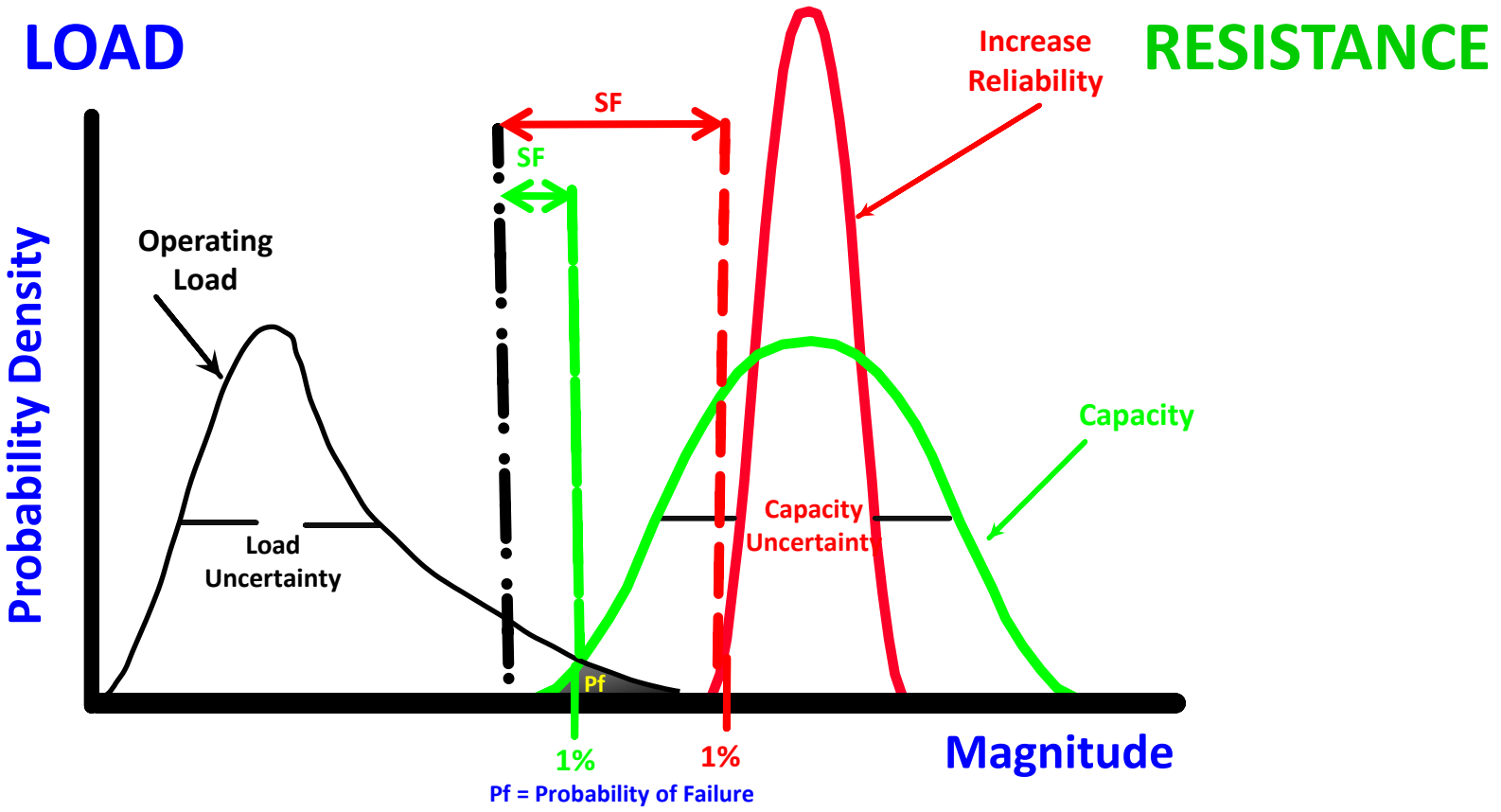
Design Concept – Load Variability

Design Risk = Probability (Load > Capacity)



Design Concept- Reliability

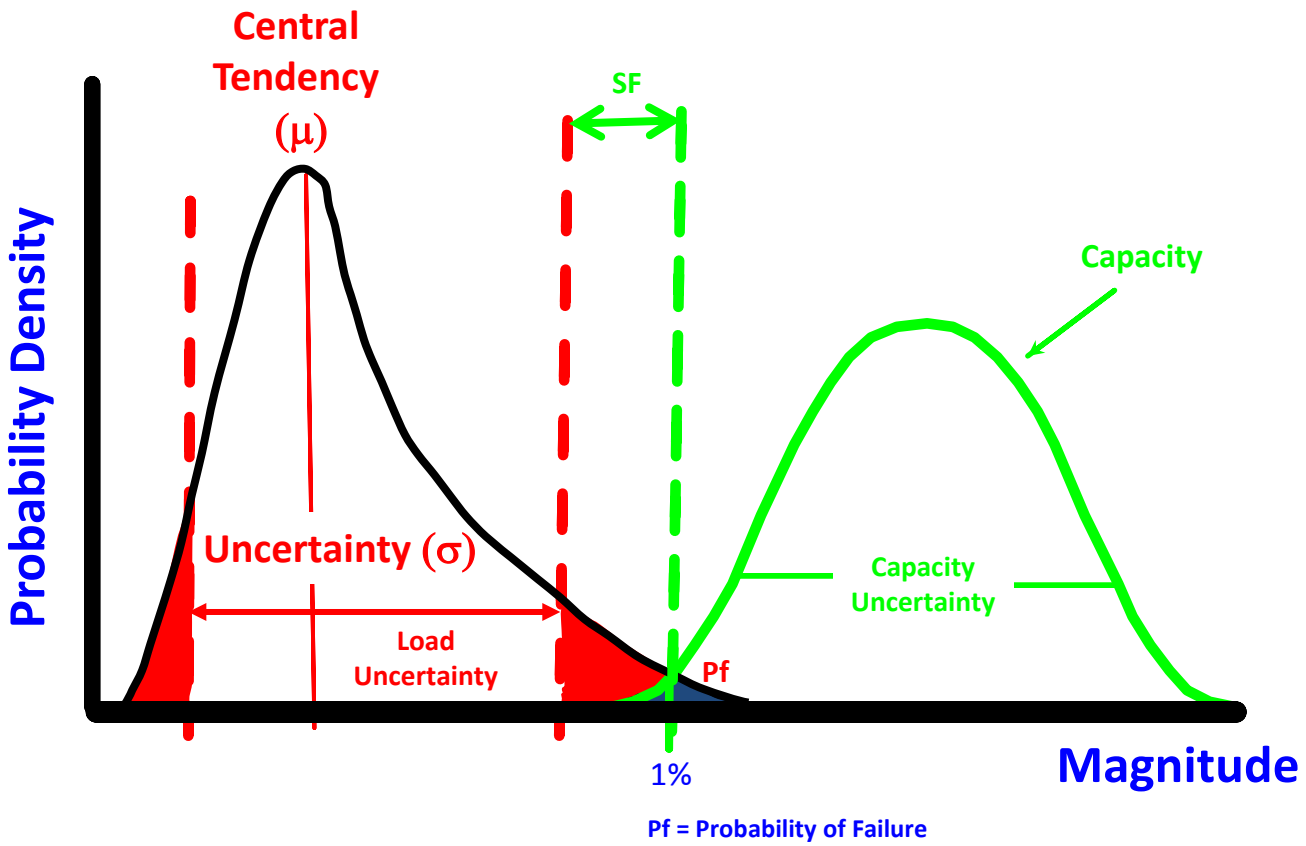
Design Risk = Probability (Load > Capacity)



Design Concept - Human Factor

Design Risk = Probability (Load > Capacity)

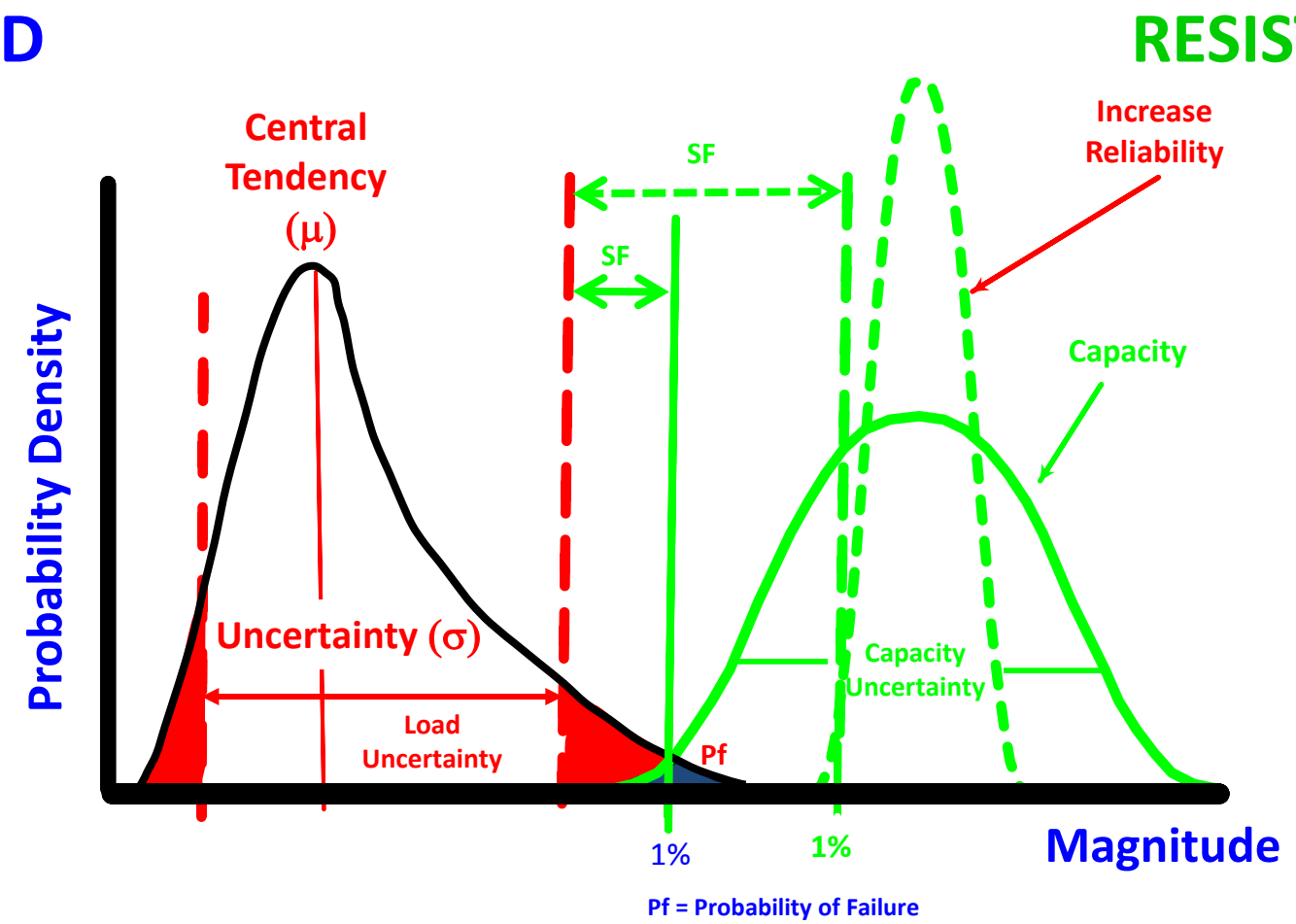
LOAD **RESISTANCE**



Pf = Probability of Failure

Design Concept - Human Factor & Reliability

Design Risk = Probability (Load > Capacity)



Risks Analysis, Assessment & Management

Risk models have different levels of detail – but most work in a similar manner